

CLAIMS

What is claimed is:

- 5           1.       A wavefront sensor comprising:
- two moiré gratings in an optical path;
- means for optically Fourier transforming a moiré deflectogram produced by said
- gratings;
- a variably transmitting optical means following said transform means in said
- 10       optical path; and
- a detector receiving an image through said optical means.
2.       The sensor of claim 1 wherein said optical means comprises a transmission filter.
- 15           3.       The sensor of claim 2 wherein said transmission filter comprises a transmissive optic
- encoding intensity information upon said moiré deflectogram as a function of fringe angle.
4.       The sensor of claim 1 wherein said optical means generates a triangular transmission
- function.
- 20           5.       The sensor of claim 4 wherein said optical means generates a triangular transmission
- function centered on a (0,0) order spatial frequency spot.
6.       The sensor of claim 5 wherein said optical means generates a triangular transmission
- 25       function oriented at 45 degrees to a y-axis.
7.       The sensor of claim 4 wherein said optical means generates a triangular transmission
- function oriented at 45 degrees to a y-axis.

8. The sensor of claim 1 wherein said optical means generates a transmission function centered on a (0,0) order spatial frequency spot.

5 9. The sensor of claim 8 wherein said optical means generates a transmission function oriented at 45 degrees to a y-axis.

10. The sensor of claim 1 wherein said optical means generates a transmission function oriented at 45 degrees to a y-axis.

11. The sensor of claim 1 wherein said transform means comprises a lens.

12. The sensor of claim 1 wherein said optical means comprises an apodized slit.

13. A Fourier moiré generating apparatus for wavefront sensing, said apparatus comprising:  
two moiré gratings in an optical path;  
optical Fourier transform means following said gratings in said optical path; and  
an apodized optical means following said transform means in said optical path.

14. The apparatus of claim 13 wherein said apodized optical means comprises an apodized slit.

15. The apparatus of claim 13 wherein said apodized optical means encodes intensity information upon said moiré deflectogram as a function of fringe angle.

16. The apparatus of claim 13 wherein said optical Fourier transform means comprises a lens.

17. A method for wavefront sensing, the method comprising the steps of:  
employing two moiré gratings in an optical path;  
optically Fourier transforming a moiré deflectogram produced by the gratings;  
variably transmitting the transformed moiré deflectogram; and  
receiving an image of the variably transmitted and transformed moiré  
deflectogram.

18. The method of claim 17 wherein variably transmitting comprises employing a  
transmission filter.

19. The method of claim 18 wherein employing a transmission filter comprises employing a  
transmissive optic encoding intensity information upon the moiré deflectogram as a function of fringe  
angle.

20. The method of claim 17 wherein variably transmitting comprises employing an optical  
means generating a triangular transmission function.

21. The method of claim 20 wherein employing an optical means comprises employing an  
optical means generating a triangular transmission function centered on a (0,0) order spatial frequency  
spot.

22. The method of claim 21 wherein employing an optical means comprises employing an  
optical means generating a triangular transmission function oriented at 45 degrees to a y-axis.

23. The method of claim 20 wherein employing an optical means comprises employing an  
optical means generating a triangular transmission function oriented at 45 degrees to a y-axis.

24. The method of claim 17 wherein employing an optical means comprises employing an optical means generating a transmission function centered on a (0,0) order spatial frequency spot.

5 25. The method of claim 24 wherein employing an optical means comprises employing an optical means generating a transmission function oriented at 45 degrees to a y-axis.

26. The method of claim 17 wherein employing an optical means comprises employing an optical means generating a transmission function oriented at 45 degrees to a y-axis.

10 27. The method of claim 17 wherein optically Fourier transforming comprises employing a lens.

28. The method of claim 17 wherein variably transmitting comprises employing an apodized slit.

15 29. A Fourier moiré generating method for wavefront sensing, the method comprising the steps of:

employing two moiré gratings in an optical path;

employing an optical Fourier transform means following the gratings in the optical

20 path; and

employing an apodized optical means following the transform means in the optical path.

25 30. The method of claim 29 wherein employing an apodized optical means comprises employing an apodized slit.

31. The method of claim 29 wherein employing an apodized optical means comprises employing apodized optical means encoding intensity information upon the moiré deflectogram as a function of fringe angle.

5 32. The method of claim 29 wherein employing an optical Fourier transform means comprises employing a lens.

10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 100 105 110 115 120 125 130 135 140 145 150 155 160 165 170 175 180 185 190 195 200 205 210 215 220 225 230 235 240 245 250 255 260 265 270 275 280 285 290 295 300 305 310 315 320 325 330 335 340 345 350 355 360 365 370 375 380 385 390 395 400 405 410 415 420 425 430 435 440 445 450 455 460 465 470 475 480 485 490 495 500 505 510 515 520 525 530 535 540 545 550 555 560 565 570 575 580 585 590 595 600 605 610 615 620 625 630 635 640 645 650 655 660 665 670 675 680 685 690 695 700 705 710 715 720 725 730 735 740 745 750 755 760 765 770 775 780 785 790 795 800 805 810 815 820 825 830 835 840 845 850 855 860 865 870 875 880 885 890 895 900 905 910 915 920 925 930 935 940 945 950 955 960 965 970 975 980 985 990 995